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ABSTRACT

A study was designed to determine the particular effects of humorous illustrations on a textbook's teaching effectiveness, appeal, persuasibility, and potential to motivate. Experimental text materials were prepared in two levels of difficulty and six cartoons were drawn to illustrate different educational points that were made in the materials. The two versions of the text and the cartoons were arranged to effect a factorial variation in level of difficulty (easy, difficult) and amount of humor (none, moderate, extensive). One-hundred eighty college students read one of the six versions of the material and evaluated it on a number of dimensions. They were then given a test over the factual content of the material, with one-half of the questions relating directly to the portion of the content illustrated by the cartoons and the remaining questions testing recall of material unrelated to the cartoons. The results revealed that humorous illustrations had (1) no effect on information acquisition and on motivation, (2) positive effects on appeal, and (3) negative effects on persuasibility. (FL)

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Humorous Illustrations in Textbooks: Effects on Information Acquisition, Appeal, Persuasibility and Motivation

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Humorous Illustrations in Textbooks:
Effects on Information Acquisition, Appeal,
Persuasibility and Motivation

A recent survey of textbook authors in psychology revealed that over 60% of the respondents used humor in their textbooks. The authors' reasons for embellishing their texts with humor ranged from claims such as "humor helps maintain student interest and motivation" to "humor can make lessons easier to grasp" (Browning, 1977, p.32). An even more recent content analysis of introductory communication textbooks illustrates the generality of such extensive humor usage: Humor was found in 88% of the 90 texts examined, with approximately six humorous items per chapter (Bryant, Gula, & Zillmann, 1980). There can be little doubt, then, that authors, editors, and/or publishers have assumed salubrious effects (either on book adoption, on learning, or on both) of incorporating humor in their educational software. The resultant "education by entertainment" perspective has clearly created a minor revolution in pedagogy.

In striking contrast to the abundance of entertainment-oriented inclusions in contemporary textbooks is the almost total lack of relevant empirical evidence to support the wisdom of such instructional practices. The bulk of the research on the non-entertainment effects of humor has been thoroughly examined in reviews by Markiewicz (1974) and Gruner (1978). In her review of the effects of humor on attitude change, source perceptions, interest, and retention, Markiewicz noted that the prior research in this area has typically yielded nonsignificant results and has been "characterized by poor methodology" (1974, p. 119). Of perhaps equal importance to the issue at hand, almost none of the prior research has been conceptualized or operationalized within educational contexts. Two notable recent exceptions warrant attention.

Kaplan and Pascoe (1977) examined the effects on comprehension and reten-

tion of using humorous examples versus unrelated humor in a classroom lecture situation. Although their results are weakened by the nonrandom assignment of subjects (intact classes were employed), the findings are nonetheless noteworthy: Information acquisition immediately after treatment was not affected by the use of humorous examples. However, six months later recall of the content of the portion of the lecture illustrated by examples was significantly better when subjects had been exposed to humorous examples rather than to serious ones. No significant differences were observed on the delayed recall test for items not associated with the humorous examples.

The effects on attention and acquisition of information of employing unrelated humor in educational television programs has also been examined recently (Zillmann, Williams, Bryant, Boynton, & Wolf, 1980). The pattern of effects on the 5-7 year old subjects was consistent for the dependent measures of attention to the televised educational messages and information acquisition. Humorous inserts, especially when they were fast paced, improved attention to and acquisition of information from the educational messages. For young children, then, even unrelated humor provides benefits in televised instruction.

It should be noted that the results from the investigations by Kaplan and Pascoe (1977) and Zillmann et al (1980) may not be generalizable to the effects of humorous illustrations in textbooks, due to the vast situational and motivational differences between the modes of education. If these results have valid empirical generalizability, however, humor may facilitate information acquisition; although for adult readers, the humor probably must directly illustrate the educational point in order to be beneficial.

In considering predictions of the effects of humorous illustrations in textbooks, to distinguish between the various criteria on which textbooks are commonly evaluated is useful. Such analytical specificity has theoretical, as well as practical, utility; since rationales will be constructed which lead

to differing predictions of the effects of humor use for the various criteria for evaluation. Four somewhat distinct criteria of evaluation are posed: (a) The pedagogical effectiveness of the book is certainly a relevant criterion for evaluation. Information acquisition is undoubtably a common index employed. Additionally, the case can be made that students' perceptions of how much they learn are also important determinants of teaching effectiveness. (b) The appeal of a text is another frequent item of concern, perhaps best evaluated by students' willingness to purchase the book, and by their enjoyment of and interest in the book. (c) Similarly, the offering's potential to motivate further interest in the material should be important to authors and potential adopters alike. (d) Finally, it is widely accepted that persuasion is an essential part of education; therefore, the text's potential to influence, as well as to inform, is a potentially useful criterion of evaluation. Rationales are now developed in terms of each of these criteria of evaluation. In all instances, that the humor employed precisely illustrates the educational message is assumed.

Regarding pedagogical effectiveness, it is widely recognized that humor is an excellent facilitator of attention (Markiewicz, 1974; Zillmann et al, 1980). If the humor is directly related to, in fact, illustrates, the educational message, it should be apparent that increased information acquisition over material directly related to the humor should result, for the reader's attention should clearly be focused on the point to be made. Moreover, the humorous illustration is not only attention-orienting, it serves as a repetition of the educational message; and repetition of a message is a critical determinant of recall (e.g., Rundus & Atkinson, 1970). It also seems likely that if the reader is casually "skimming" the material, a humorous illustration may not only serve to divert attention to itself, it may stimulate the readers' curiosity about the topic at hand and cause him or her to engage in an information search of the

surrounding material. This process should also facilitate information acquisition. A related but more complex theoretical rationale based on vigilance has been proposed by Zillmann et al (1980).

From the preceding rationales, that a "good" humorous illustration could possibly be an educational detriment seems unlikely. Plausible rationales contradicting this assumption are readily available, however. For instance, humor may be primarily an effective stimulator of fantasy. In fact, it has been argued that in order for a stimulus to evoke mirth it must be fantasy-assimilated (McGhee, 1972). If a reader, upon processing a cartoon or joke, converts to a "fantasy mode," it appears likely that further "serious" attention to the material at hand will be impaired.

Bateson's (1972) theory of play and fantasy can be interpreted as yielding similar predictions. Bateson identifies numerous metacommunicative "signs" that serve as indicators that what follows is play; that is, the action should not be taken seriously. Certainly the superstructure of a cartoon or a joke should serve to indicate such to a well-socialized reader. Therefore, the reader may devalue content associated with such cues and "pass over" this information in favor of the really important, serious material. This is especially likely when reading is done in the context of "doing an assignment," which to many students is apparently the antithesis of play.

The above rationales apply to acquisition of information from contents directly related to humorous illustrations. What about the other portions of the text, those sections devoid of any relationship to the humor? Bateson's rationale suggests that these passages should receive more careful attention than the humor in the typical "doing homework" mode of reading, as long as the play frame does not extend beyond the boundaries of its sign. Although material associated with humorous illustrations should suffer in terms of recall, the nonhumorous fare should be recalled as well as that presented without any humor,

unless the reader generalizes from the presence of a few humorous embellishments and surmises that the entire selection is not to be taken seriously. In this case, the presence of humor should reduce information acquisition even for material not directly associated with the humor.

Other rationales yield less ambiguous predictions regarding recall of the content not related to humor. Returning to prior considerations of humor as a facilator of attention, it can be argued (cf. Zillmann et al, 1980) (a) that humorous inserts induce pleasant reactions and thus function as incentives or gratifiers, (b) because of the incentive value of humor, respondents pay close attention to the humor, (c) but, because of their preoccupation with the humor, are less attentive to the educational presentations. In this manner, humor functions as a distractor from unrelated educational messages, and less information is acquired from the nonhumorous material.

Considerations of the effects of humorous illustrations on the appeal of textbooks can be made independent of assumptions regarding the texts' pedagogical effectiveness. In the recent investigation by Zillmann et al (1980), the assumption was made that humor is enjoyable in its own right. Arguments were then advanced that the positive affect engendered from exposure to a joke or a cartoon generalizes to the educational message per se. This is similar to the notion of a hedonic set (Manis, 1967). If the cartoon or joke illustrates the text, the stimulus differentiation between the humorous and the educational material should be minimal, and affect generalization may be expected to enhance the appeal of the surrounding chapter or, in the case of periodically repeated humorous stimuli which evoke positive affect, the entire book. The notion of affect generalization is only necessary when appeal judgments are made for educational materials independent of the humorous embellishments. If an entire selection--"serious" educational material and humorous illustrations--is evaluated intact, as seems appropriate when judging the appeal of a book which may

or may not contain humor, it is more parsimonious to assume that the book is more appealing because of the merits of the humor alone, not because of any effect that the humor may have on the appeal of the educational material.

Rationales can also be constructed to explain loss of appeal due to humorous illustrations. For example, if the respondent is motivated to master the educational material, and if the humor serves as an unwanted distractor, thereby providing a vexing goal-blocking treatment, appeal of the book should be impaired. At one level, the humor may induce an affective distraction by interfering with the respondent's serious mood so that he or she finds it effortful to regain a "productive" serious state. At another level, the humor may function as a cognitive distractor, if something about the humor intervenes in the rehearsal of cognitions associated with the educational material. Either consideration leads to expectations that humorous illustrations may reduce the appeal of the text.

Humorous illustrations may also be expected to affect the readers' motivations to sustain attention to other similar educational material. Following the earlier assumption that humorous illustrations may function as gratifiers, that readers may attend to further educational messages because of the reward value of the humorous inserts may be argued. In other words, humor may function as an external incentive to attract the viewer to further educational fare. In the case in which the reader expects more humor to be mixed in with the education, a more parsimonious rationale is operant conditioning. On the other hand, if, for whatever reason, humor attains negative reinforcement value, books with greater numbers of humorous illustrations should extinguish reading.

The final rationales posed relate to the potential effects of humorous illustrations on persuasion. In the frequently cited study by Festinger and Maccoby (1964), in one condition a humorous film was presented as a distractor while subjects heard an unrelated persuasive speech. In the other presentation

condition, subjects viewed the speaker without the humorous distractor. Attitude change was greater in the condition featuring the humorous distractor. The investigators interpreted their findings as supporting the position that the humorous distractor disarmed the listener and prevented the development of counterarguments.

The same effect could be predicted from considerations of affect generalization, as previously discussed. If the assumption is made that humorous illustrations generally induce a state of positive affect, and if the humor is similar to the persuasive message, then the stimulus similarity should produce affect generalization, resulting in a persuasive message that is better liked. Increased attitude change should follow the enhancement of message appeal.

Predictions relating to persuasion can also be derived from considerations of the credibility of the source of the persuasive message (the author), since source credibility has frequently been found to be a critical determinant of persuasion (e.g., Markiewicz, 1974). If the reader appraises the author as witty, innovative or as having excellent command of his or her material because of the superior use of humorous illustrations, and if the reader values these attributes, then it might be expected that the author will have high credibility, and, in turn, will be effective in persuasion. In contrast, readers may determine that anyone who must "stoop" to using cartoons must lack the ability to make his or her point seriously. With this diminution in source credibility, the author's potential to persuade should be impaired.

The present investigation was designed to determine the particular effects of the involvement of different frequencies of inclusion of humorous illustrations on a textbook's teaching effectiveness, appeal, persuasibility, and potential to motivate. Since a number of the rationales presented are dependent upon the relationship between the educational materials and the humor, the educational message was prepared in two levels of difficulty, in order to potentially

improve the explanatory power of the findings. For example, if increases in the amount of humor are associated with greater appeal for easy material but the converse effect results for the more difficult versions, then the appeal of the book obviously cannot be explained on the basis of the entertainment value of the humor alone. The manipulation of degree of difficulty should provide a powerful treatment in its own right, providing a frame of reference from which to assess the magnitude of any humor effects. Finally, since the "learning can be fun" movement has frequently been associated with less demanding standards, it should be interesting to determine how and when these two dimensions of the contemporary learning process interact.

Method

Subjects

One-hundred eighty undergraduates who were enrolled in an introductory communication course at the University of Massachusetts served as subjects. Approximately 60% of the students were female. Subjects received course bonus points for their participation. The study was administered while the students were attending a regular class session.

Design

A section from a draft chapter of a book on interpersonal communication[1] was prepared in two levels of difficulty. Six cartoons were drawn to illustrate different educational points that were made in the written material. The two versions of the text and the cartoons were arranged to effect a factorial variation in (a) level of difficulty (easy, difficult) and (b) amount of humor (no humor, moderate humor, extensive humor). Subjects read one of the six versions of the material and evaluated it on a number of dimensions. Then, an unannounced test was administered over the factual content of the material, with one-half of the questions relating directly to the portion of the content illustrated by the cartoons and with the remaining questions testing recall of

material unrelated to the humorous embellishments.

Materials

Educational materials. The experimental materials were presented in a six-page booklet entitled "The Idea of Communication." The selection chosen examined the place of communication, especially metacommunication, in various cultures, and considerable attention was devoted to general issues of epistomology. In its original form, the book was targeted for mature scholars at the graduate level and beyond.

Manipulation of level of difficulty. With minor exceptions, the original material was retained as written as the difficult version. This material was edited to form the easy version by eliminating jargon, simplifying concepts, removing parenthetical material, reducing the complexity of sentence structure, and the like.[2] The manipulation was similar to the rather common editorial practice of rewriting a graduate level text so that it can be used for an undergraduate audience. This manipulation is illustrated by presenting the same excerpt at the two different levels of difficulty:

(1) Difficult. About the turn of this century, a convergence of developments both in academic pursuits and in society at large sufficed to invalidate the traditional Western view of communication. The assumption that communication was an odorless, colorless vehicle of thought and expression was refuted by philosophers and mathematicians who demonstrated that all languages are closed symbolic systems with properties of their own, not isomorphic with each other or "reality."

(2) Easy. Around the year 1900, a number of new ideas about communication became popular with many professors. These ideas were well received by several im-

portant other members of society as well. Some of these developments in thinking about communication cast serious doubt on the way people in the Western Hemisphere had been thinking about the way they spoke and listened. In the past, it had been widely accepted that a word meant exactly the same thing to everyone who heard it. However, several scholars rather cleverly proved that, not only do different people have different meanings for the same word, but also a word is not the same thing as the object or idea for which it stands.

Humorous illustrations. The cartoons were drawn so as to precisely illustrate certain portions of the written text.[3] One passage from each page of text was illustrated. Therefore, six cartoons were prepared. Two examples of the cartoons are presented below, preceded by an abbreviated version of the text they were designed to illustrate:

(1) Herodotus reflected the Greek fascination with oral discourse, as he put improbable speeches in the mouths of the protagonists in his somewhat interpretive histories.

Insert Figure 1 about here
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(2) "True" theories are those which successfully resist strenuous efforts to disprove them.

Insert Figure 2 about here

Manipulation of amount of humorous illustrations. In the no humor condition, the written material was presented without humorous embellishments. For moderate humor, two cartoons were included, one on page two and the other on page four. For extensive humor, all six illustrative cartoons were included, one per page of text.

Checks on the materials. To determine how adequately each cartoon illustrated the educational messages, ten graduate students enrolled in a seminar at the University of Massachusetts examined the booklets containing the written materials and all six humorous illustrations, with five students receiving the difficult version and five receiving the easy version. Each student determined how adequately each cartoon illustrated an educational point by marking a questionnaire containing six identical scales, one scale per cartoon. The scales ranged from 0 to 10, were marked and numbered at each integer, and were labeled "fails to make the educational point" at 0 and "makes the educational point precisely" at 10. Scores were consistently high, with the grand mean= 9.3, and with the mean score for all cartoons embedded in the easier material= 9.2, while the mean associated with the more difficult material=9.4. No cartoon received a mean score of less than 8.6. Therefore, the cartoons were determined to provide excellent illustrations for the content of the text.

The cartoons were also found to be very funny in the context in which they were presented. Twenty undergraduate students enrolled in an introductory course in Mass Communications read the easier version of the text with all six cartoons included and independently rated each cartoon in response to the question "How funny was the cartoon you just examined?" The response scale ranged from 0 (labeled "not funny at all") to 10 (labeled "extremely funny") and was marked and numbered at each integer. The grand mean was 9.1. No cartoon received a mean rating of less than 8.3.

To evaluate the effectiveness of the manipulation of level of difficulty

of the educational material, twenty undergraduate students enrolled in an introductory course in Mass Communications read one of the two versions of the material without humorous illustration. They then rated the entire selection on a single scale in response to the following question: "How difficult is the material that you just read?" The scale was identical to that used for judging how effectively the cartoons made the educational point, except that the polar labels were "extremely easy"at 0 and "extremely difficult" at 10. A t-test performed on these ratings revealed that the manipulation was successful ($p<.001$), with well-differentiated mean scores: easy, $\bar{X}=3.9$; difficult, $\bar{X}=8.7$. Ratings by subjects in the main experiment corroborated these results.

Procedure

The booklets representing the various conditions were placed in a random sequence and distributed to class members. The instructor informed the class that they could help future students by pretesting a new book that was being seriously considered for adoption upon publication for a new course that could be based on it. They were informed that their feedback, which they were assured would be anonymous, would also be of service to the author in making revisions for future drafts of that section. They were asked to read the material in the same manner as they would read any other text and were informed that there was no time pressure for this in-class reading assignment. They were, however, requested to read silently so as not to disturb other students.

When all subjects had finished reading the selection, questionnaires on which the students would evaluate the material were distributed. After the evaluation had been completed, the booklets and questionnaires were set aside,

and an unannounced objective quiz was administered, testing for factual recall of the contents of the material. Subjects were reassured that their performance would remain anonymous, although the importance of the test for evaluating the utility of the book was emphasized. When all testing had been completed, the booklets, questionnaires, and test answer sheets were collected, and subjects were extensively debriefed. When the results became available, the project was discussed in class.

Dependent Measures

Self-report. The questionnaire provided subjects with the opportunity to rate the selection on a number of dimensions relevant to textbook evaluation. The same rating scale , with different polar labels, was employed for each question. The scale was unipolar, ranged from 0 to 10, and was marked and numbered at each integer. The seven questions posed on the questionnaire, along with the specific labels for the pole, were: (1) "Overall, how much did you learn from the portion of the chapter you just read?" ("nothing whatsoever"--"a tremendous amount"); (2) "How interesting was the portion of the chapter you just read?" ("not interesting at all"--"extremely interesting"); (3) "How enjoyable was the portion of the chapter you just read?" ("not enjoyable at all"--"extremely enjoyable"); (4) "What are the chances that you would buy this book if it were presently available?" ("not likely at all"--"extremely likely"); (5) "How persuasive was the portion of the chapter you just read? That is, overall how much did the author change your mind to be in line with his or her own views on the topics presented?" ("not persuasive at all"--"extremely persuasive"); (6) "How credible was the author of the chapter? That is, in general, how believable was he or she; how much of an expert did he or she appear to be; and how much confidence do you think you can put in whatever he or she had to say?" ("not credible at all"--"extremely credible"); (7) "What

are the chances that you would read more of the book on your own?" ("not likely at all"--"extremely likely"); (8) "What are the chances that you would take a course with this book as the text?" ("not likely at all"--"extremely likely"); (9) "Overall, how difficult was the material presented in this selection?" ("not difficult at all"--"extremely difficult").

After subjects had completed the questionnaire, they took an unannounced test consisting of 12 "completion" items. Two items were selected from each page of text: (a) one item was unrelated to the material illustrated by the cartoons and (b) one item was related to the humor. All items were considered to be of moderate difficulty and had an unambiguous answer.

Results

Independent-measures analyses of variance were used in the data analysis. A seperate analysis was performed on the data from each self-report measure and on the data for frequency of correct responses to each portion of the recall test.

Pedagogical Effectiveness

The analysis of variance performed on the frequency of correct responses on the information-acquisition test for items related to humorous illustrations produced a significant effect for level of difficulty ($F(1,174)=35.62$, $p<.001$), with subjects performing better on the less difficult material ($\bar{X}=3.94$; more difficult, $\bar{X}=2.84$). It should be noted that the questions were identical in both versions; only the level of difficulty of the presentation varied. In sharp contrast, the main effect for amount of humor was not significant ($F(2,174)=1.22$, $p>.10$), although the pattern of means display a linear trend ($\bar{X}$'s: no humor=3.23, moderate humor=3.37, extensive humor=3.58). The interaction between humor usage and degree of difficulty was likewise insignificant ($F<1$),

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Insert Table 1 about here

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with mean scores as reported in Table 1. Apparently, with adult subjects, the insertion of humorous illustrations has no effect on acquisition of directly related information. This finding clearly contrasts with that reported regarding children's acquisition of information from educational television programs (Zillmann et al, 1980), even though in the earlier study the humor was entirely unrelated to the educational message. Whereas, in the present study, the cartoons essentially repeated the educational information, albeit in a visual and humorous manner.

For the items testing recall of material unrelated to the humor, the analysis of variance yielded similar results. Once again, the main effect for level of difficulty was highly significant ($F(1,174)=58.34$, $p<.001$; $\bar{X}$'s: easy=4.06, difficult=2.44). The main effect for amount of humor was somewhat stronger on this measure, but it was still not significant ($F(2,174)=2.61$, $p<.10$). In this instance, the pattern of means was the opposite of that reported for the test over material related to the humorous illustrations: More humor resulted in somewhat poorer test scores ($\bar{X}$'s: no humor=3.57, moderate humor=3.20, extensive humor=2.98). It appears that whatever meager gains on learning that may have resulted from the use of humor for items testing material directly related to the humor were lost on learning of material unrelated to humorous illustrations, although both tendencies were entirely unreliable. Once again, the amount-of-humor by level-of-difficulty interaction was not significant ($F(2,174)=1.03$, $p>.10$).

The analysis of variance performed on subjects' self-reports of how much they had learned yielded no significant main effects: level of difficulty=$F<1$; amount of humor=$F(2,174)=1.29$, $p>.10$. The associated interaction was likewise not significant ($F<1$), with elementary means reported in Table 1. The perceived learning effect obviously differs strongly from that measured by the factual recall tests' level-of-difficulty factor. It may be that the subjects

had to "work" so hard reading the difficult material that they thought they surely must have learned more, or they may actually have learned a great deal about their own abilities to handle material more difficult than that to which they had typically been exposed. Either of these or other rationales are beyond the explanatory scope of the present investigation, however.

Rated Appeal

The analyses of variance performed on the data for the three factors relating to appeal yielded results which differed primarily in magnitude. For reported interest, the main effect of level of difficulty was significant ($F(1,174)=16,35$, $p<.001$), with the less difficult version producing more interest ($\bar{X}=5.70$) than the more difficult material ($\bar{X}=4.38$). The main effect for amount of humor failed to reach acceptable levels of significance ($F(2,174)=2.09$, $p<.25$), but a consistent linear pattern of means resulted ($\bar{X}$'s: no humor=4.62, moderate humor=5.07, extensive humor=5.43). As can be seen from an examination of Table 2, this pattern of means held across levels of difficulty,

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Insert Table 2 about here
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as is further evidenced by the lack of an interaction ($F<1$).

By far stronger effects of humorous illustration occurred on the presumedly more affectively-oriented appeal factor: rated enjoyment. Once again, the main effect for level of difficulty was strong and consistent ($F(1,174)=54.25$, $p<.001$; $\bar{X}$'s: easy=6.44, difficult=4.51). On this measure, however, the main effect for amount of humor was also robust ($F(2,174)=25.72$, $p<.001$). The pattern of means was identical to that occurring on the nonsignificant main effect for the "interesting" measure; however, in this instance, adjacent means were ideally differentiated ($p<.05$ by Newman-Keuls' test). The means were: no humor=4.47, moderate humor=5.23, extensive humor=6.73). A significant ordinal interaction also resulted ($F(2,174)=6.08$, $p<.005$). As can be seen from the means displayed in

Table 2, the interaction resulted because the magnitude of the increase of enjoyment with increasing humor usage was considerably higher when the material was easier to read.

For reported likelihood of book purchase, the main effect of level of difficulty was significant ($F(1,174)=41.39$, $p<.001$), with increased likelihood of purchase for the easier version ($\bar{X}=3.13$; difficult $\bar{X}=1.93$). The main effect for amount of humor was likewise significant, with $F(2,174)=18.13$, $p<.001$, with associated means: no humor=1.98, moderate humor=2.47, extensive humor=3.14. Only the extreme scores differ significantly at $p<.05$ by Newman-Keuls' test. The interaction was also highly significant ($F(2,174)=15.72$, $p<.001$), with mean scores as displayed in Table 2. The pattern of elementary means is identical to that for the enjoyment measure, only on the measure of purchasing decision, the effect was more pronounced.

Perceived Persuasiveness and Author Credibility

The pattern of results from the analyses of variance performed on the factors of perceived persuasiveness and author credibility differed markedly from those reported previously, and they were consistent across these two measures. In general, increments in humor yielded decrements in rated persuasiveness and author credibility.

For perceived persuasiveness, the main effect for level of difficulty was not significant ($F<1$), a strong contrast with previous findings. Nor did the level-of-difficulty by amount-of-humor interaction approach significance ($F<1$). Those elementary mean scores are reported in Table 2. The amount-of-humor main effect was significant, however, with $F(2,174)=3.24$, $p<.05$. The mean for no humor was 4.83; for moderate humor, 4.80; for extensive humor, 3.91. The only significant difference between adjacent means was between conditions of moderate and extensive humor ($p<.05$ by Newman-Keuls' test).

Neither the main effect of level of difficulty ($F<1$) nor the level-of-dif-

ficulty by amount-of-humor interaction ($F(2,174)=2.28$, $p<.25$; means displayed in Table 2) reached acceptable levels of significance for the factor of credibility of author. The main effect for amount of humor was highly significant, however ($F(2,174)=16.67$, $p<.001$), with adjacent means differentiated at $p<.05$ by Newman-Keuls' test. These means are: no humor=6.48, moderate humor=5.27, extensive humor=4.30.

Motivation of Further Interest in Material

The results of the analyses of variance on the two factors designed to determine the effectiveness of humor in stimulating further interest in the educational material presented demonstrated that humorous illustrations provide little impetus to continue independent or course-related inquiry in the educational area under consideration; however, the level of difficulty of the material is an important determinant in this regard. For the responses to the question evaluating likelihood of the subjects' independent reading of more of the book, both the main effect of amount of humor and the level-of-difficulty by amount-of-humor interaction yielded $F<1$. The elementary means are displayed in Table 2. The main effect of level of difficulty was significant ($F(1,174)=7.50$, $p<.01$), with the easier material generating more interest ($\bar{X}=4.29$) than the more difficult version of the material ($\bar{X}=3.44$).

The pattern of responses was identical for the assessment of the respondents' likelihood of taking a course in which this material would serve as the text. The interaction again yielded $F<1$, and the main effect of level of difficulty was significant ($F(1,174)=4.13$, $p<.05$), with the same pattern of mean differentiation: easy=3.53, difficult=2.87. On this measure, the effect of amount of humor was somewhat stronger, although still not significant ($F(2,174)=1.42$, $P>.10$). The pattern of means is suggestive of beneficial effects, but the strength of the effect is totally unreliable. The means are: no humor=2.83, moderate humor=3.27, extensive humor=3.50.

Perceived Difficulty of Material

The final measure was designed to serve both as a check on the manipulation (determined by the main effect of level of difficulty) and as an assessment of the effects of humorous illustrations on perceived difficulty of the material. The analysis of variance performed on these data yielded verification of the effectiveness of the level-of-difficulty manipulation, with $F(1,174)=85.76$, $p<.001$, and with means of easy=4.87 and difficult=7.87. The amount-of-humor manipulation failed in the main effect, however ($F<1$); although an interesting ordinal interaction resulted ($F(2,174)=3.32$, $p<.05$). As can be seen from the means displayed in Table 2, for the easier material, an increased number of humorous illustrations apparently served to make the reading seem a bit less difficult. For more difficult material, however, increases in humor usage made the already difficult task even more tedious. However, the weakness of the interaction and lack of differentiation between adjacent means suggests caution in interpreting these findings.

Discussion

The results of the present investigation demonstrate that the frequency of use of humorous illustrations enhances the appeal of texts and reduces their persuasibility. Information acquisition and students' motivations to continue exposure to the material are apparently not affected greatly by humor usage. Since the results were generally consistent across the various measures associated with each dependent factor, the evidence is considered to be rather strong.

The most pronounced effect observed for the use of humorous illustrations was on measures of book appeal. The main effect of amount of humor on the measures of likelihood of book purchase and enjoyment of the material might appear, at first glance, to lend clear support to the notion of affect generalization and/or that of the simple additive effects of the appeal of humor per se. These rationales were confounded in the present investigation due to lack of speci-

ficity in the dependent variables. However, the relatively strong and consistent interactions observed on both of these measures indicates that humor use has an additive effect only when the educational material is easy. When humorous illustrations are employed with more difficult material, increased humor use has a less pronounced effect on appeal. The most simple explanation for this finding seems to be that the beneficial effects on appeal of employing more humor (which would be additive under other circumstances) are simply reduced by the necessity of "working through" the difficult and, therefore, not particularly appealing educational material. This notion is strengthened by the fact that the difficult version of the text with no humor received mean scores which fell well below the midpoint for the measures of "interesting," "enjoyable," and "purchase potential." Increased humor usage appears to serve the cause of appeal somewhat, even when "the going gets rough;" it just doesn't help as much under these circumstances. Since the more frequent utilization of humor in no instance resulted in a loss of appeal, the notion that humor may serve as an unwanted distractor from educational achievements received no support whatsoever under the present conditions.

The finding that increased usage of humorous illustrations produced decrements in persuasibility is probably best explained through the source-mediation rationale posed earlier. Apparently the use of humor contributed greatly to the decreased authority and believability of the author, for the effects on the credibility measure were robust. A strong positive correlation (r=.83) between ratings of perceived credibility and perceived persuasibility lends support to this contention. It should be noted that this effect occurred under judicious use of very funny cartoons which were judged to be precise illustrations of the educational point. What greater erosion of credibility occurs from the use of a marginally related "Peanuts" or "Doonesbury" cartoon intended primarily to "jazz up" the material?

One nonsignificant effect warrants comment: the lack of an effect of humor use on information acquisition. It can, of course, be rationalized that Kaplan and Pascoe (1977) similarly found no short-term effects of using humorous illustrations, although such humor use was beneficial for long-term retention of educational concepts. The differences between the two investigations should be apparent, however: Whereas Kaplan and Pascoe balanced humorous examples with serious examples, the present investigation was biased in favor of beneficial effects of humor use on acquisition of information related to the humorously-illustrated educational points, because humorous illustrations essentially repeated the educational message. Yet no significant improvement in test performance on items related to the humor was found. This aspect of the findings obviously merits further investigation, especially in light of the findings of Zillmann et al (1980) that even unrelated humor facilitates children's acquisition of information from educational television programs.

Although certainly not the focus of the investigation, the effects of level of difficulty of the material were very revealing, both in their own right and in combination with the humorous treatments. Level of difficulty of resource materials is obviously a critical determinant of teaching effectiveness, appeal, and the motivation to seek further exposure to the educational material. In every instance, the benefits appear to lie with the use of less difficult material. This should not necessarily be interpreted as a mandate for "spoon feeding" or for employing "watered down" material, however; rather a caution against using materials that are too difficult or overly advanced is in order. It should be remembered that the subjects were undergraduate students (Freshmen and Sophmores, for the most part), and that the "easy" version of the material was edited to be targeted for them. Of special interest is the finding that humor "worked best" in the less difficult material, as is evidence by the significant appeal-related interactions. This can be interpreted as concurrence that the "educa-

tion by entertainment" perspective is "on target" for undergraduates by beginning with easy reading and lightening it even further with humorous illustrations. The long-term effects on intrinsic motivation and educational expectations of this perspective have yet to be determined.

One serendipitious finding relating to perceived difficulty emerged. It may be recalled that one of the rationales for using humor employed by a psychology textbook author was that "humor can make lessons easier to grasp" (Browning, 1977, p.32). The finding of a significant humor by level-of-difficulty interaction for perceived difficulty of the material indicates that this assumption holds only for material that is relatively easy in the first place; for difficult material, humorous illustrations, even good ones, apparently make the material seem even more difficult.

Concluding with a rather practical and generalized application of the findings: Humorous embellishment of textbooks is rather clearly a "mixed blessing." On the positive side, humor usage makes the text more enjoyable and potentially more marketable. In terms of educational value, humor appears neither to help nor to hurt. Looking at the negative, if the author has a point to make, his or her persuasive potential tends to be impaired by employing humorous illustrations. So the "education by entertainment" perspective seems to serve best those whose primary motives are to maximize text adoptions and/or to make the students happy. Humor apparently fails the educator whose premier desire is that the student acquire vast stores of information. Those hurt by humor use are teachers who desire to be influential agents of educational change.

Notes

[1]The authors would like to thank W. Barnett Pearce and Vernon E. Cronen for providing the text for this project. The book from which this draft chapter was excerpted is Communication, Action and Meaning: The Construction of Social Realities, which is scheduled for publication by Praeger in 1980.

[2]SME served as the editor.

[3]AS prepared the cartoons.

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Table 1

Mean Scores of Actual and Perceived Information Acquisition from Written Educational Material Presented at Different Levels of Difficulty and with Different Amounts of Humor

Dependent measure	Amount of humor	Level of difficulty of material	
		Easy	Difficult
Recall test: Items related to humor	None	3.70	2.76
	Moderate	4.00	2.73
	Extensive	4.13	3.03
Recall test: Items unrelated to humor	None	4.30	2.83
	Moderate	3.87	2.53
	Extensive	4.00	1.97
Self-reported learning	None	5.30	5.43
	Moderate	5.43	5.47
	Extensive	5.07	4.57

Note. The mean scores for the test items represent the number of correct items on an objective test. There were six items related to humor and six unrelated items in the test. The self-report items are from a separate questionnaire dealing with perceptions of the material.

Table 2

Mean Ratings on Several Self-Report Measures for Written Educational Material Presented at Different Levels of Difficulty and with Different Amounts of Humor

Dependent measure	Level of difficulty of material					
	Easy			Difficult		
	Amount of humor			Amount of humor		
	None	Moderate	Extensive	None	Moderate	Extensive
Buy book	2.11[a]	3.01[b]	4.28[c]	1.87[a]	1.93[a]	1.99[a]
Interesting	5.13	5.87	6.10	4.03	4.10	5.00
Enjoyable	5.00[ab]	6.00[b]	8.33[c]	3.93[a]	4.46[a]	5.13[b]
Persuasive	5.20	4.73	4.07	4.87	4.47	3.77
Credible	6.00	5.00	4.60	6.97	5.53	4.00
Read more	3.87	4.40	4.60	3.30	3.63	3.40
Take course	3.03	3.53	4.03	2.63	3.00	2.97
Difficult	5.27[ab]	5.00[a]	4.33[a]	7.27[b]	8.00[b]	8.33[bc]

Note. Means having different superscripts differ significantly at $p < .05$ by Newman-Keuls' test.

There is nothing to fear, but fear itself. Shake your booty. Sh ke Shake Sh Shak

Figure 1

hee, hee
HA, HA, Look at that Funny Looking Theory!
Theory
INQUIRER
WELL-Known THEORY CAUGHT IN THE ACT!!
CAREER RUINED!!
Theory
TAR
HEP

Figure 2 .